Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**AP Biology: Unit 1, DBA #4 Review**

Ms. OK, 2014-2015

**Objectives Assessed:** Topic 4 (Hardy Weinberg Equilibrium), Learning Targets H-I

***Calculations:*** *Determine the correct value for each scenario given below. Show all your work, and use the following equations to help you. (2 points each)*

|  |  |
| --- | --- |
| Allele Frequencies | p + q = 1 |
| Genotype Frequencies | p2 + 2pq + q2 = 1 |

1. 1 A certain homozygous recessive genotype occurs in 4% of a population. What is the frequency of its two alleles, T and t?
2. If q = 0.3 and there are Hardy-Weinberg proportions, what is the most common genotype and what is its frequency? What is the least frequent genotype and its frequency?
3. In *Drosophilia*, the allele for normal length wings is dominant over the allele for vestigial wings. In a population of 1,000 individuals, 360 show the recessive phenotype. How many individuals would you expect to be homozygous dominant?
4. In a population of 2,000 earthworms, there is a condition governed by a recessive allele where the worms do not have any setae. Setae are tiny hair-like projections needed by the worm to move through the ground. 500 worms were found not having setae. What percent of the population were heterozygous for the setae?
5. The allele for a hitchhiker's thumb is dominant over a straight thumb. In a population of 1000 individuals, 510 show the dominant phenotype. What is the frequency of the dominant allele?